GEOGRAPHIC SCHOOL BULLETINS

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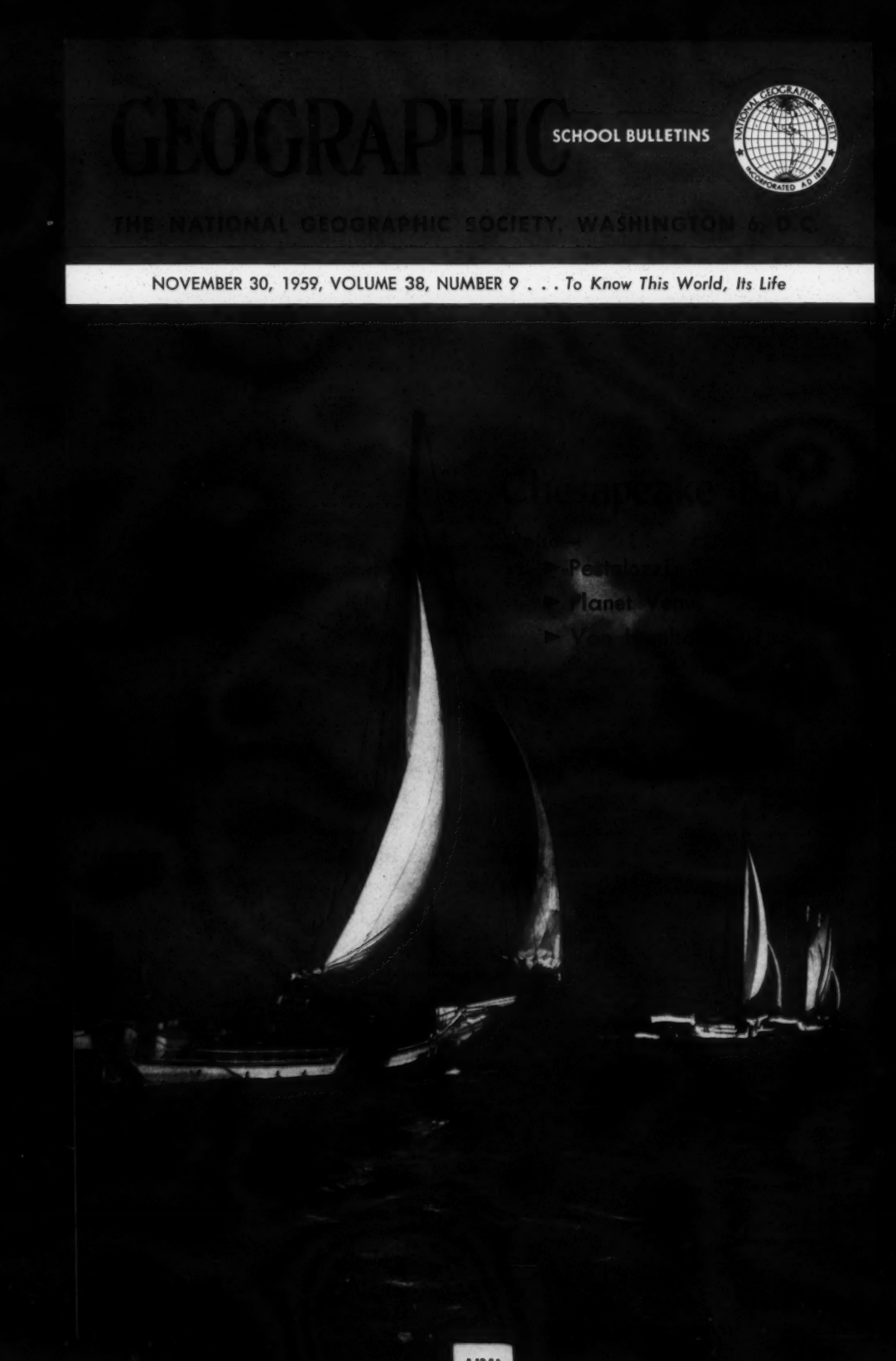
NOVEMBER 30, 1959, VOLUME 38, NUMBER 9 . . . *To Know This World, Its Life*



year; Canada, $2.25; elsewhere, $2.50. U. S. only, 3 years (90 issues), $5.00. The National Geographic Society is a nonprofit educational and scientific society established for the increase and diffusion of geographic knowledge.

It stares like a 200-year-old palatial home, and shouts with a red-coated huntsman riding to hounds. It is quiet like the neat, white houses of Smith Islanders who cling to an isolated way of life that keeps them close to nature and God.

It scours like a heavy rainstorm that uncovers fossil crocodile teeth and the rib bones of whales from the Cliffs of Calvert on the western shore of the bay. It studies like a Johns Hopkins scientist-frogman diving to the bottom to take water samples.

It is as sturdy as the Chesapeake Bay Bridge, four miles long, linking the Delmarva Peninsula with the mainland.

Chesapeake Bay is the largest United States ocean bay, nearly 200 miles long. It is formed by the submerged lower valley of the Susquehanna River. The Potomac, Rappahannock, Patuxent, York, James, and other smaller rivers and creeks feed its waters. Varying in width from three to 23 miles, it covers an area of 3,237 square miles. It washes 3,000 miles of Maryland coast and 2,600 miles of Virginia shore.

The bay is about one million years old. In its youth mastodons, sabre-tooth cats, and jaguars fed in the rich jungle growth of its shores, while crocodiles and whales roamed its waters, only to be chased south by the mammoth glaciers of the Ice Age.

Indians lived on the shores at least 3,000 years ago. Nanticokes, Conoys, and Susquehannocks canoed bay and tidewater before white men ventured in searching for the passage to the Orient.

The discovery of the bay is disputed. Some historians credit Thorfinn Karlsefni,

BALTIMORE ASSOCIATION OF COMMERCE

SHIPPING MAGNET—Baltimore, a leading American port, grew from tobacco trade

a Viking who sailed down the coast nearly 500 years before Columbus saw America. Others say John Cabot at least knew of the bay in 1498. Still others attribute the discovery to Verrazano. Many say Pedro Menéndez Marques, a Spaniard, was the first to find the bay about 1573.

However, Captain John Smith, in 1608, was the first to explore and map the bay in detail. Publication of his findings brought a parade of colonists who were to be the founders of the New World. The next settlement was established in 1634 on St. Clements Island (now Blakiston) in the Potomac River.

Lacking roads, early colonists built their homes on tidewater, and their whole way of life was based on it. They found much of their food in the bays and rivers. News

UMI

AUBREY BODINE, COVER AND ABOVE

TONGS RAISE OYSTERS from their shallow beds in Chesapeake Bay as a woman wields the long pincers. Ordinarily, men do this work and women help their husbands cull the catch—separating large and small oysters.

Part of the Chesapeake Bay oyster fleet is shown on the cover. Skipjacks and schooners work the waters near Sharps Island. All oyster dredging in Maryland is done by sailing vessels instead of by more efficient motor boats as a conservation measure.

Since before the adoption of the United States Constitution, Maryland and Virginia have been at odds over harvesting methods. A compact seeks to end the 300-year "Oyster War."

CHESAPEAKE...Nation's Largest Ocean Bay

TO ITS PEOPLE, Chesapeake Bay is simply "The Bay."

Many bright strokes paint its portrait:

It glides like racing yachts streaking along with the wind astern. It points like a hunter's dog poised to go after his duck when it falls.

It lazes like hours on a sun-swept beach. It tastes of crab feasts, oyster roasts, diamondback terrapin, Maryland fried chicken, Crab Norfolk, and Smithfield ham.

It is a docked freighter and bustling tugs in Baltimore harbor (below). It struts like a sailor on shore leave in Norfolk. It whines like a jet plane roaring out of Patuxent River Naval Air Test Center at Cedar Point, Maryland.

It strikes a stately pose with homes along the rivers of Maryland's Eastern Shore, where Colonial Americans settled to make use of the water highway.

It growls like a helicopter hovering over a Virginia pepper patch, pouring out poison dust to kill hornworm and blight.

It grunts like a farmer bending over a row of potatoes as he baskets them for sale. It smells of cannery smoke drifting for miles as tomatoes are prepared for world markets. It waits like a mountain of tidewater pine about to be turned into pulp and paper in a plant at West Point, Virginia.

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sent ships to fight Spain toward the start of this century. Supply ships from bay ports crossed the oceans to American troops during both World Wars. LCI's and LST's, Navy landing craft, rehearsed for invasions spilling out men and tanks on bay beaches during World War II.

Puritans founded Annapolis, capital of Maryland, in 1649. Here, in the old State House, George Washington resigned his commission in 1783, and shortly afterward Congress ratified the treaty that ended the war with Great Britain. Today the city is most famous as the site of the United States Naval Academy. Below, midshipmen aboard an Academy yacht study navigation.

Today's bay is a center of fishing, freight, and fun.

Captain John Smith wrote that the fish in Chesapeake ran so thick that he could ladle them out of the water in his frying pan. Some 300 kinds of fin and shellfish inhabit the bay, including menhaden, eel, catfish, rock, hardhead, sea trout, shad, perch, bluefish, black drum, largemouth black bass, flounder, and shark. Crabs, clams, and diamondback terrapins are caught. The oyster harvest makes up three-fourths of the fishing industry. Towns are named for the delicacy —Bivalve, Maryland, and Oyster, Virginia.

The waterman, who makes his living pulling these fish out of the bay, changes little from generation to generation. He may live isolated on an island, like Smith Island which had no electricity until 1949, or in a mainland fishing town like Crisfield, Maryland, whose Main Street is one long wharf. He is God-fearing and hard-working.

From the shore where he stretches his net after the day's fishing, he can see the great freighters, flying the flags of Germany, Japan, or South Africa, plying through the bay to Newport News, Norfolk, Portsmouth, or Baltimore.

Its harbor has made Baltimore the sixth largest city in the United States. It gained a naval reputation as early as the Revolutionary War, kept it through the 18th century when fast clipper ships brought South American coffee, Chinese tea, and African slaves to Baltimore. In 1957 more than 28,000,000 long tons of freight channeled through the port.

Vacationers flock to the bay like wild fowl to the Susquehanna Flats, a favorite duck hunting spot. Yacht clubs line the bay's shores. Races include every kind of craft from the dinghy to the $250,000 Class A unlimited yachts. Sportsmen, casting from everything from pilings and rowboats to cabin cruisers, fish for fun every year. Water skiers trail motor boats on summer week ends. Miles and miles of beaches provide hours of basking under the sun for city-dwellers. L.B.

● See also: *National Geographic*—May 1957, "Captain Smith of Jamestown"; May 1955, "One Hundred Hours Beneath the Chesapeake"; April 1954, "Roving Maryland's Cavalier Country" ($1 each).

PAUL PRYOR

UMI

NATIONAL GEOGRAPHIC PHOTOGRAPHERS BATES LITTLEHALES AND ROBERT F. SISSON, BELOW

and mail traveled water routes. Nearly all transportation was by water. Tide-powered mills ground corn and wheat.

The houses of the colonists, often manors and plantations operated on an almost feudal basis, faced the river and their private wharves. There they unloaded cargoes from Europe and shipped abroad their golden tobacco. Everyone had at least a small boat, and some estates had their own ocean-going merchant ships. Today one can travel by automobile past mansion after mansion and never see one. But let him take a boat and sail the rivers and creeks, and he will see them all, gracious 17th and 18th century Colonial houses rising to dominate meticulously landscaped estates through Maryland and Virginia.

The porticoed mansion Sunset Hall (above) nestles on a strip of land between Trippe Creek (background), a tributary, and the Avon River (foreground) on Maryland's low-lying Eastern Shore. Eastbound tobacco cargoes were launched on just such waterways. Fat oysters, fish, crabs, diamondback terrapin, and wild fowl come to tidewater tables.

The bay country figures prominently in American history. The bay's easy communication and transportation linked Chesapeake colonists in alliance against the Indians, and later helped bind the colonies together in the rebellion against England. The Battle of Yorktown, in

MARYLAND'S EASTERN SHORE displays water-flanked estates, above, and rich hunting grounds, below. Trappers plod home with muskrats, soon to be furs.

which British troops were trapped on a peninsula jutting into the bay, ended the Revolutionary War.

During the War of 1812, the defeat of the British at Fort McHenry, Baltimore, inspired Francis Scott Key to write "The Star-Spangled Banner." The Civil War saw Hampton Roads as the scene of the historic battle between the *Monitor* and the *Merrimac* (see GSB March 9, 1959). Also during that war, bay waters and rivers provided an important military route for the Union troops.

Norfolk, Virginia, still a naval center,

— A Refuge for Europe's Waifs

Each nationality has its own house, or houses, where the children learn, live, and play together under direction of teachers from their own countries. They speak their mother tongue, follow the school curriculum of their homeland, but come together for games, crafts, music, and excursions.

Brian's fellow villagers hail from France, Finland, Austria, Italy, Greece, Hungary, Germany, and Switzerland. In the Swiss house (below, left) houseparents and children join in family meals, believing with Pestalozzi that "the home is the center of influence."

Donated money, goods, and work built the village, seen in the foreground at right. Behind it lie Appenzell Canton's dazzling slopes and towering Alps.

GETTING a head start on a trade, a potential architect builds a cardboard village in kindergarten. Later he will sample several vocations before choosing his career. In their final months in the village, Pestalozzi boys are apprenticed to craftsmen in the near-by town of Trogen. Girls learn homemaking, gardening, typewriting, office work, and languages. More than 1,000 Pestalozzi "graduates" now lead productive lives in the outside world.

UMI

PHOTOGRAPHS BY ALFRED LAMMER

PESTALOZZI VILLAGE— A

IN 18th century Switzerland, Johann Heinrich Pestalozzi helped lay the foundation for modern education when he began teaching with heart as well as head. His humanitarian ideals came to full flower in 1946 when a village to house Europe's World War II orphans was named for him.

Pestalozzi Children's Village, in northeast Switzerland, embodies the pioneer educator's belief that the greatest of all teaching aids is love. The painting in the picture (left) shows Pestalozzi caring for innocent victims of the Napoleonic wars. Before the portrait stands Brian, a homeless child of today's troubled world. Housemother Jean Marsden lights hope in his eyes as she welcomes him to one of Pestalozzi's British houses.

day—how quickly it makes a complete turn on its axis—remains unknown. It has been estimated at from 20 hours to 225 earthly days. Venus sweeps around the sun every 225 days.

Using a spectroscope—an instrument which splits up the light and tells what materials are reflecting it—scientists have discovered that Venus's outer atmosphere contains much unbreathable carbon dioxide. But this does not rule out the possibility of life on the planet. Our own upper atmosphere, containing little life-giving oxygen or water vapor, might similarly mislead a Venusian astronomer.

Scientists know even less about inner cloud layers. What are they made of? One analysis suggests salts, such as sodium chloride and magnesium chloride, produced by evaporation of former oceans. Another says formaldehyde. A group of scientists recently advanced the idea that the atmosphere contains a highly poisonous gas which might extend downward to the surface of the planet—a new hazard to future explorers.

What lies below the clouds? Some say luxuriant jungles and possibly some primitive life grow on a planet with high temperatures and high humidity. If this is true, Venus may be developing along the lines of earth, but lagging about 250,000,000 years behind our own planet.

Others say Venus is a dust-bowl, baked by temperatures higher than that of boiling water, lashed by violent winds and offering not a drop to drink.

Still others say Venus is completely covered by water. However, United States Navy scientists report that temperatures seem too high for oceans.

Since Venus resembles the Earth in size, scientists have searched for a satellite similar to our moon. By the middle of the 18th century, astronomers thought they had found one. Then it "disappeared" and has not been seen since. As far as we know now Venus flies solo.

If a large part of the planet remains clouded, some mysteries about it have been solved. Identification was the first. Long ago Venus became known as the Morning Star or Evening Star, because it is best seen at twilight or just before dawn. Ancients believed it was two different stars which they called Phosphorus and Hesperus. But as early as 500 B.C., the Greek geometrician Pythagoras realized the two stars were actually one.

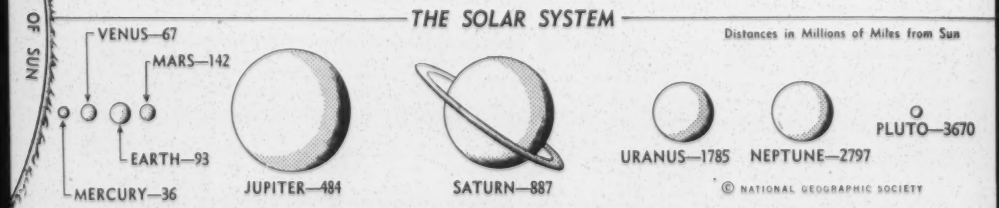
What we do know is that in size, brilliance, and density, Venus is similar to Earth. We also know that next to Mercury, Venus is the planet closest to the sun. The distance is only 67,000,000 miles, compared to 93,000,000 for Earth.

Scientists hope that investigations of the planet may help them learn the origin of life on Earth. Possibly, they theorize, conditions on Venus today—and on Mars, another subject for study—may resemble those on Earth millions of years ago.

Plans are in the works to launch Venus-bound rockets to collect the information scientists have so far not been able to gather from their observatories. Technical problems delayed a shot scheduled for last June. Future Venus shots, at least several months away, will depend on the planet's position in space, as well as the success of rocket experts in overcoming engineering obstacles for a journey that probably will take more than 150 days.

One day the planet may be forced to show more than the dazzling beauty which earned it the right to be named for the Roman Goddess of Love.

PLACE IN THE SUN—Earth's sister Venus spins in the solar system between Mercury and our own planet. It receives twice as much heat and light energy as the Earth.



UMI

LOWELL OBSERVATORY

MOON AND VENUS, the two brightest bodies in the night sky, show in this one photograph. Although much larger than the moon, Venus appears smaller because of its vastly greater distance from Earth. When seen through a telescope, Venus shows phases like the moon's.

When the moon appears as a crescent, its whole face also glows, but less brightly. Leonardo da Vinci said the glow is caused by Earth reflecting sunlight on the moon, as the moon reflects light on Earth. Something similar happens on Venus. Called the Ashen Light, it illuminates a dark hemisphere of the planet against Venus's brilliant crescent. Venus has no satellite to shine down on it, and Earth could not cause such a glow. Best explanation: the Ashen Light is due to electrical disturbances in the planet's atmosphere, similar to Earth's aurora.

The Solar System, No. 3

EARTH'S MYSTERIOUS SISTER . . . VENUS

WHAT WILL the first space traveler find when he sets foot on the planet Venus?

No one knows, though Venus is Earth's closest neighbor in the solar system except for the moon and an occasional comet or asteroid. It sometimes swings within a mere 25,000,000 miles. But like a proud lady worthy of her mythological name, Venus refuses to reveal many of her secrets to earthlings.

The main reason for the lack of information about Venus is that astronomers are unable to see the planet itself, even with their largest telescopic eyes.

Anyone who has ever stared at dazzling Venus in the night sky may well ask, "How can they miss it?"

To the naked eye, Venus is magnificent, the brightest spot in the sky except for the sun and moon. It reflects some 60 percent of the sunlight that falls upon it. When it glows most brilliantly, you can see it at midday, cast a shadow by it at night. At its peak it is six times brighter than Jupiter and 15 times brighter than Sirius, the brightest star. In several flying saucer reports, the culprit has been identified as Venus.

Put your eye to a telescope, however, and you solve the riddle. What you see is a bright, whitish disc with only vague, hazy features. So dense is the mantle of clouds surrounding the planet that no telescope can pierce it. It is sunlight reflected from this envelope of clouds that we see in the dark sky. Frustrated astronomers can observe only the outer layers of this atmosphere. It is something like trying to look across a city in a thick smog.

Because Venus hides her inner self behind this heavy veil, the length of a Venusian

SCIENTIST'S SKETCH-BOOK—Drawings reinforced Humboldt's collections of plants and animals. This lithograph of an American monkey was made from one of the scientist's sketches. As a boy Humboldt was so talented an artist he was allowed to exhibit his work on the walls of his mother's bedroom.

Humboldt are found in Illinois, Iowa, Kansas, Minnesota, Nebraska, South Dakota, Tennessee, and Saskatchewan. California and New Guinea have Humboldt Bays. Nevada has a Humboldt River, Colorado a Humboldt Peak. China has Humboldt Mountains, Greenland a Humboldt Glacier. The ocean current which he measured off the Pacific Coast of South America was named for him.

The world Humboldt was born into in 1769 cried out for explorers in every field. Science was changing man's ideas about the universe. In England James Watt perfected the steam engine, In Italy Count Alessandro Volta, the physicist from whom the volt got its name, experimented with electricity. In France in 1770, the chemist Antoine-Laurent Lavoisier began his studies on combustion. His discoveries later led to a complete overhaul of the system of classification of chemical elements.

It was an age of restlessness. The French, Dutch, English, and Germans carved farms and forts out of the North American wilderness. The Spanish spread through Central and South America.

ALL ILLUSTRATIONS FROM PAN AMERICAN UNION

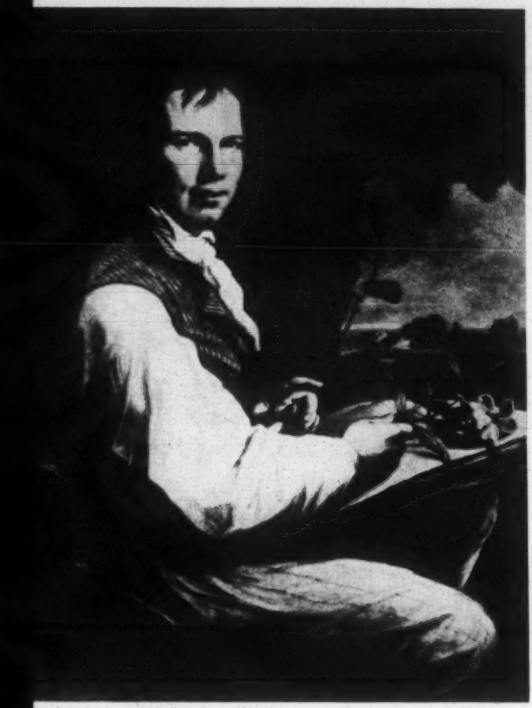
UMI

Humboldt . . . First Modern Geographer

ALEXANDER VON HUMBOLDT died 100 years ago. Much of his work is outdated. Yet his feats continue to strike the scholarly world with awe.

No student can wander through the world of geography without meeting him. His versatility, his dedication to his chosen field, and the groundwork he laid for future scientists are torches that still burn bright.

Humboldt was a one-man geographic society. He had such encyclopedic knowledge that the German poet Goethe called him a "school of learning in himself." He was an anthropologist, astronomer, botanist, geographer, geologist, geophysicist, meteorologist, oceanographer, physiologist, and zoologist. His curiosity drove him from his native Germany to the steaming jungles of South America and the sprawling Steppes of Russia, with stops along the way in Mexico and the United States.



PORTRAIT BY F. G. WEITSCH

Remarkably, he made significant contributions in all fields. The anthropologist in him studied the traditions of the Incas, Aztecs, and Mayas and recognized the importance of environment in the formation of customs. Raising the Indian to a status of human dignity was a new concept for the Europeans who treated New World natives as slaves. Below, Humboldt defies European tradition by refusing to ride in a chair carried by Ecuadorian Indians.

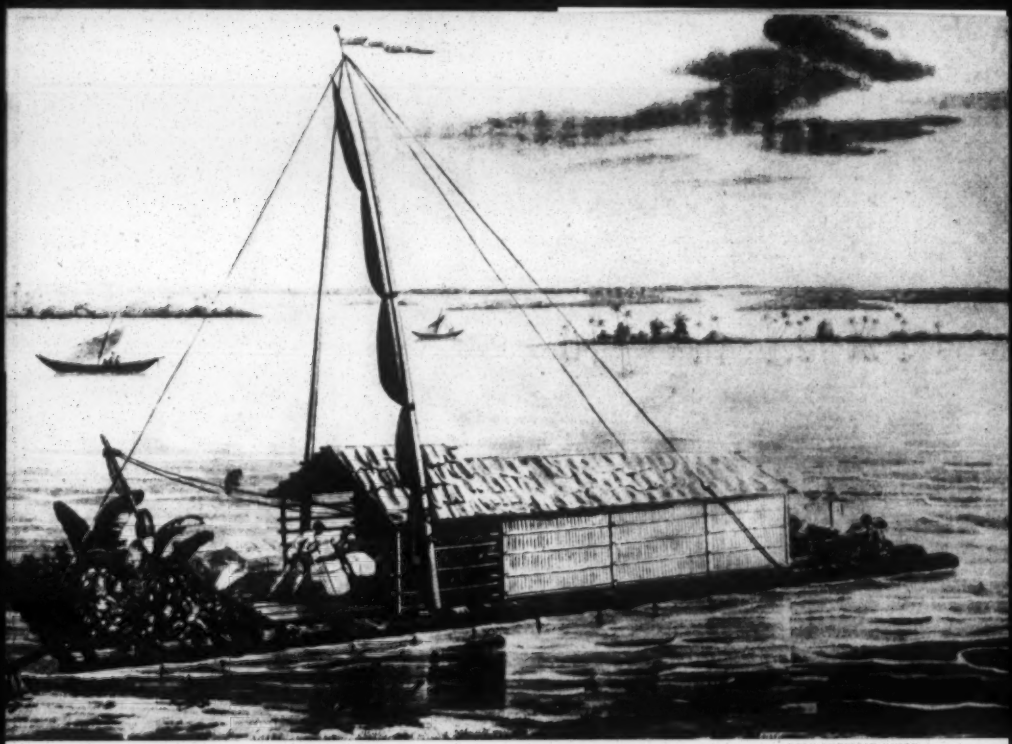
In astronomy, Humboldt first observed with instruments the great meteor showers of 1799 and helped establish the concept that meteor showers occur at regular intervals.

In botany he supplied the first accurate information on rubber trees. He collected some 60,000 new plant specimens of all kinds and described 3,500 new species.

Nineteenth century map makers pored over his notebooks seeking information. He had explored South America extensively. He pinpointed the connection of the Orinoco and Amazon Rivers. His writings were prolific. In his last work, *Cosmos,* in which he tried to explain the universe, the index alone ran 1,117 pages.

Nor did his interests stop with science. He was a vigorous humanitarian. Any form of slavery oppressed him. His social conscience as a young mine inspector in Germany—when social consciousness was a rarity—drove him to establish a mining school. It served as a model for later schools and inspired social improvements for the miners. On a visit to Cuba he wrote a political essay on the sad history of the treatment of Negro slaves.

Altogether Humboldt's accomplishments brought him fame rivaling Napoleon's in Europe. He became a legend even in the United States. Today he is immortalized in geographic place names from China to Venezuela. Towns named



PAN AMERICAN UNION

ORINOCO ODYSSEY—Humboldt sailed up the Orinoco on a balsa raft like the one above. This lithograph, which appeared in his travel books, is based on his sketches.

It was also an age of freedom. When Humboldt was six, American minutemen fired on British troops at Lexington. Two months before his 20th birthday, Frenchmen stormed the Bastille.

Humboldt's father died when Alexander was ten. His education was left to his mother. She hired the best tutors of the time, but she saw Alexander and his brother Wilhelm as bankers, soldiers, or government officials. In those days, science was for dreamers. To make matters worse, the brilliant Wilhelm thrived on classical studies. He later became a statesman, poet, philosopher, and student of languages.

Alexander's family called him "the little apothecary," partly because he insisted on collecting flora and fauna on the family estate, partly in contempt.

But the slur did not stop him. He wandered in the pine forests of the estate near Berlin. He roamed the sandy beaches of its lake, the sandpits, the hills covered with grapevines and mulberry trees. He returned from his rovings laden with insects, plants and flowers.

While he walked he dreamed not of botanical specimens and ocean currents, but of Captain Cook and Robinson Crusoe. To Alexander's boyish, adventurous mind, these men knew how to live. He, too, would live like that one day. With most boys the urge to travel and explore fades with years. Maturity only fanned the flames in Alexander. Boyhood yearning became adult obsession.

But first he had a mother to please. He went into government service, as a mine director where he could learn geology literally from the bottom up.

But mining was not getting him out of Germany. In 1797, he threw aside a promising career to study again his beloved science and to travel.

The year 1799 found him, a slender young man of medium height, with dark hair curling fashionably over his ears, his forehead etched with smallpox scars, standing on the deck of the Spanish frigate *Pizarro*, bound for South America and a life of discovery. L.B.

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